

REMARKS

Applicant has carefully reviewed and considered the Office Action mailed on January 22, 2002, and the references cited therewith.

Claims 20-21, 38-39, 41, 50-57 and 59 are amended. Claims 13 - 61 remain pending in this application.

§112 Rejection of the Claims

Claims 38, 39, 50-53, 55, and 56 were rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant has amended claims 38, 39, 50-53, 55 and 56 to remove the term "approximately." Applicant respectfully requests withdrawal of the rejection and reconsideration of the claims. Applicant respectfully asserts that the scope of the invention as recited by these amended claims include the full scope of equivalents to which such claims are entitled.

Claims 20, 21, 41, 47, 52-57, and 59 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant asserts that amended claims 20, 21, 41, 52-57 and 59 particularly point out and distinctly claim the subject matter which Applicant regards as the invention. With respect to claim 47, Applicant respectfully traverses the assertion that the language is not defined to allow one in the art to ascertain the scope that is proper fluid pressure and level. Applicant respectfully submits that the claim language in question, when analyzed in light of the content of the application disclosure, is not indefinite. One of ordinary skill in the art will understand, upon reading and comprehending the disclosure, that the track coating unit operates with a proper fluid pressure and level as determined by the system requirements and the design of the track coating unit (See, for example, page 9, lines 20 - 24 of the Specification). One of ordinary skill in the art also will understand, upon reading and comprehending the disclosure, that the low pressure container maintains the proper fluid pressure and level for the track coating unit. Applicant respectfully requests withdrawal of the rejection

and reconsideration of the claims.

§103 Rejection of the Claims

Claims 13 and 15-20 were rejected under 35 USC § 103(a) as being unpatentable over Orth (U.S. Patent No. 5,750,317) in view of Gordon (U.S. Patent No. 5,066,616) and Yoda et al. (U.S. Patent No. 5,876,882). Applicant respectfully traverses the rejection at least for the following reasons.

With respect to independent claim 13, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon and Yoda et al. references taken either alone or in combination, a showing or suggestion of a solvent dispense head in fluid communication with a solvent source containing a solvent that includes diacetone alcohol, and a logic control unit that executes a process tat includes distributing the solvent on a wafer surface, and upon distributing the solvent, distributing the photo resist solution on the wafer surface as recited in the claim.

The rejection asserts that Orth suggests that *other methods may be employed by the logic control unit (See Fig. 3 and Col 5, line 44)*. Applicant respectfully traverses this assertion. Column 5, line 44 states that other solvent dispense techniques may be used. Applicant respectfully points out that this statement in the Orth reference neither shows or suggests the invention recited in claim 13. For example, Applicant is unable to find, among other things, in the Orth reference a showing or suggestion that a solvent including diacetone alcohol is distributed on a wafer surface, and then the photo resist solution is distributed on the wafer surface.

The rejection asserts that Gordon shows that *it is known and conventional to distribute solvent prior to a photo resist*. Applicant respectfully traverses this assertion. Applicant respectfully points out that the Gordon reference neither shows nor suggests the invention recited in claim 13. For example, Applicant is unable to find, among other things, in the Gordon reference any showing or suggestion that a solvent including diacetone alcohol is distributed on a wafer surface, and that a photo resist solution is then distributed on the wafer surface as recited in the claim. Gordon applies a quantity of liquid solvent that is sufficient to wet the substrate

surface with liquid solvent (Col. 4, lines 34-40 and Col 5, lines 1-6). Applicant is unable to find, among other things, in the Gordon reference a teaching or a suggestion to use an unconventional, low vapor pressure, slow-drying solvent (such as diacetone alcohol) to wet the wafer surface prior to applying the photo resist solution as recited in the claim. Applicant's use of diacetone alcohol, which has a low vapor pressure and a slow evaporation rate, allows good results with very little solvent prewet solution (Page 5, line 25 to Page 6, line 3).

The rejection asserts that it *would have been obvious to one of ordinary skill in the art at the time of the invention to supply diacetone alcohol to the dispense head of Orth as is a well known and conventional solvent for photo resists as shown by Yoda et al.*, and further asserts that *one in the art choosing diacetone alcohol to prepare the photo resist would also choose the same in order to obtain the advantages disclosed by Gordon -- no unexpected results are achieved.* Applicant respectfully traverses this assertion. Applicant respectfully points out that, although the Yoda et al. reference provides a list of organic solvents, including glycol ethers, ketones, ethers, alcohols (including diacetone alcohol), hydrocarbons, esters, and acid amides, there is no showing or suggestion in Yoda et al. to use diacetone alcohol as recited in claim 13. The Gordon reference does not suggest the desirability of using diacetone alcohol as a solvent with a low vapor pressure and a slow evaporation rate to reduce the amount of prewet solution. The Orth and Yoda et al. references also do not suggest the desirability of using diacetone alcohol.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the references, not in Applicant's disclosure. Applicant is unable to find such a teaching or suggestion in the references, and thus asserts that the finding of obviousness improperly involves hindsight.

With respect to independent claim 19, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon and Yoda et al. references taken either alone or in combination, a showing or suggestion of a solvent dispense head in fluid communication with a solvent source containing a solvent that includes diacetone alcohol and aliphatic ester, and a logic control unit that executes a process, including dispensing the solvent on a wafer surface, actuating the rotatable wafer-holding mechanism to spin the wafer until the solvent is distributed across the

wafer surface, dispensing the photo resist solution on the wafer surface upon distributing the solvent, and actuating the rotatable wafer-holding mechanism to spin the wafer until the photo resist solution is distributed across the wafer surface as recited in the claim.

The rejection asserts that *it is well known and conventional to use diacetone alcohol and aliphatic ester as the solvent in photoresist as shown, for example, by Yoda et al.* and further asserts that *one in the art choosing diacetone alcohol and aliphatic ester to prepare the photoresist would also choose the same in order to obtain the advantages disclosed by Gordon – no unexpected results.* Applicant respectfully traverses this assertion. In addition to the reasons provided above with respect to independent claim 13, Applicant is unable to find, among other things, the term “aliphatic ester” in the Yoda et al. reference. As such, Applicant asserts that the Yoda et al. reference does not show or suggest the use of diacetone alcohol and aliphatic ester to prepare the photo resist. Furthermore, Applicant is unable to find, among other things, a suggestion in the Yoda et al. reference a suggestion to use the solvent in the photo resist as a prewet solvent, and is unable to find, among other things, a motivation to combine the Yoda et al. and Gordon references in either the Yoda et al. reference or the Gordon reference, or a motivation to use a diacetone alcohol and aliphatic ester as a low vapor pressure, slow-drying solvent to wet the wafer surface prior to applying the photo resist solution as recited in the claim. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the references, not in Applicant’s disclosure.

Claims 14 and 21 were rejected under 35 USC § 103(a) as being unpatentable over Orth, Gordon, and Yoda et al. as applied to claims 13 and 19 above, and further in view of Hayes et al. (U.S. Patent No. 5,849,084). Applicant respectfully traverses the rejection at least for the reasons provided above with respect to independent claims 13 and 19. Furthermore, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., and Hayes et al. references either alone or in combination, a showing or suggestion of a first and second nozzle in fluid communication with the source of photo resist solution, and a third nozzle in fluid communication with the solvent source as recited in the claim.

Claims 24, 26, and 27 were rejected under 35 USC § 103(a) as being unpatentable over Orth in view of Gordon, Yoda et al., and Hayes et al. Applicant respectfully traverses the

rejection at least for the following reasons in addition to those reasons provided above. With respect to independent claim 24, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., and Hayes et al. references taken either alone or in combination, a showing or suggestion of a solvent dispense head in fluid communication with a photo resist solution and a solvent source containing a solvent that includes diacetone alcohol, and a logic control unit that executes a process, including distributing the solvent on a wafer surface and distributing the photo resist solution on the wafer surface and upon distributing the solvent as recited in the claim.

Claims 28, 29, 31, 37, 41, 42, and 58-60 were rejected under 35 USC § 103(a) as being unpatentable over Orth in view of Gordon, Yoda et al., and Hasebe et al. (U.S. Patent No. 5,658,615). Applicant respectfully traverses the rejection at least for the following reasons in addition to the reasons provided above.

With respect to independent claim 28, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., and Hasebe et al. references taken either alone or in combination, a showing or suggestion of an apparatus that includes a solvent dispense head in fluid communication with a source of a photo resist solution and in fluid communication with a solvent source containing a solvent that includes diacetone alcohol, and a logic control unit adapted for executing a process to coat a wafer that includes: dispensing the solvent on a wafer surface; spinning the wafer until the solvent is distributed across the wafer surface, dispensing the photo resist solution on the wafer, and spinning the wafer until the photo resist solution is distributed across the wafer surface as recited in the claim.

With respect to independent claim 37, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., and Hasebe et al. references taken either alone or in combination, a showing or suggestion of an apparatus that includes a solvent dispense head in fluid communication with a source of a photo resist solution and a bulk solvent that includes diacetone alcohol, and a logic control unit adapted for executing a process to coat a wafer that

includes: dispensing the solvent on a wafer surface; spinning the wafer until the solvent is distributed across the wafer surface, dispensing the photo resist solution on the wafer, and spinning the wafer until the photo resist solution is distributed across the wafer surface as recited in the claim.

With respect to independent claim 42, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., and Hasebe et al. references taken either alone or in combination, a showing or suggestion of a solvent dispense head in fluid communication with a source of a photo resist solution and a bulk solvent that includes a mixture of diacetone alcohol and aliphatic ester, and a logic control unit adapted for executing a process to coat a wafer that includes: dispensing the solvent on a wafer surface; spinning the wafer until the solvent is distributed across the wafer surface, dispensing the photo resist solution on the wafer, and spinning the wafer until the photo resist solution is distributed across the wafer surface as recited in the claim.

With respect to independent claim 58, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., and Hasebe et al. references taken either alone or in combination, a showing or suggestion of a bulk solvent container wherein a bulk solvent contained therein includes diacetone alcohol, and a tracking coating unit comprising a logic control unit adapted for executing a process to coat a wafer that includes: dispensing the bulk solvent on a wafer surface; spinning the wafer until the bulk solvent is distributed across the wafer surface, dispensing the photo resist solution on the wafer, spinning the wafer until the photo resist solution is distributed across the wafer surface as recited in the claim, and dispensing the bulk solvent on the edge and side of the wafer and on the back of the wafer for edge bead removal and cleanup after distributing the photo resist as recited in the claim.

Claims 32, 33, and 36 were rejected under 35 USC § 103(a) as being unpatentable over Orth in view of Gordon, Yoda et al., Hayes et al., and Hasebe et al. Applicant respectfully traverses the rejection at least for the following reasons in addition to the reasons provided above.

With respect to independent claim 32, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., Hayes et al., and Hasebe et al. references taken either alone or in combination, a showing or suggestion of a solvent dispense head with a first and second nozzle in fluid communication with a source of a photo resist solution and a third nozzle in fluid communication with a solvent source containing a solvent that includes diacetone alcohol, and a logic control unit adapted for executing a process to coat a wafer as recited in the claim.

With respect to independent claim 36, Applicant is unable to find a showing or suggestion of the claimed apparatus. For example, Applicant is unable to find, among other things, in the Orth, Gordon, Yoda et al., Hayes et al., and Hasebe et al. references taken either alone or in combination, a showing or suggestion of a photo resist solvent that includes the solvent from the solvent source as recited in the claim.

Claims 25 and 35 were rejected under 35 USC § 103(a) as being unpatentable over Orth in view of Gordon, Yoda et al., Hayes et al., as applied to claim 24 above, over Orth in view of Gordon, Yoda et al., Hayes et al., and Hasebe et al. as applied to claim 32 above, and further in view of Ikeno et al. (U.S. Patent No. 4,886,012). Applicant respectfully traverses the rejection at least for the reasons provided above.

Applicant respectfully requests withdrawal of the rejection, and reconsideration and allowance of independent claims 13, 19, 24, 28, 32, 37, 42 and 58, as well as those claims which depend from them.

Allowable Subject Matter

Claims 22, 23, 30, 34, 40, 43, and 61 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 54 and 57 were indicated to be allowable if rewritten to overcome the rejection(s) under 35 USC § 112 set forth in the Office Action. Applicant notes that claim 47 stands rejected only under 35 USC § 112, second paragraph, that claims 38, 39, 43, 50, and 51 stand rejected only under 35 USC § 112, first

paragraph, and that claims 52, 53, 55 and 56 stand rejected only under 35 USC § 112, first paragraph, and 35 USC § 112, second paragraph. Thus, Applicant believes that these claims would also be allowable if rewritten to overcome the rejection(s) under 35 USC § 112 set forth in the Office Action. Applicant respectfully requests reconsideration and allowance of these claims.

Applicant acknowledges the allowance of claims 44-46, 48, and 49.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6960 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

JOHN WHITMAN

By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(612) 373-6960

Date 4-17-02

By

Mar L Beekman
Marvin L. Beekman
Reg. No. 38,377

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 17 day of April, 2002.

Name

Tina Pugh

Signature

[Signature]